

## **REMARKS/ARGUMENTS**

### **I. STATUS OF CLAIMS**

Claim 33 has been amended and claim 36 has been canceled. Accordingly, claims 18, 26-27, 29-33 and 35 are presently pending in the application. All pending claims stand rejected.

### **II. CLAIM REJECTIONS – 35 U.S.C. § 103**

Claims 27, 29, 30, 32, 33 and 36 stand rejected under 35 USC §103(a) as being unpatentable over Gilboa (US 2002/0193686, hereinafter **Gilboa**) in view of Werp et al. (US 6,015,414, hereinafter **Werp**), and further in view of Ferry et al. (US 7,276,044, hereinafter **Ferry**). Applicants respectfully overcome this rejection.

Independent claim 33 has been amended to recite the step of determining “a modified path that involves a corrective movement ...” when other, recited conditions are met. Support for the amendment may be found throughout the specification and drawings as originally filed (e.g., “It is noted that the controller may change the path in real-time, depending on findings during the navigation process (e.g., blocked passages, lumen which is narrower than expected). The controller modifies the path according to the feedback provided in real time by the position detector . . . Furthermore, the controller modifies the a predefined three-dimensional path which is used as a three-dimensional roadmap for the planning process.” p. 17, lines 1-8, original specification). Neither **Gilboa**, **Werp** nor **Ferry** teach a method for guiding a catheter as claimed that includes such a feature.

At most, **Gilboa** teach navigation of a catheter between a measured position and an estimated target point-of-interest which, even assuming for purposes of argument only constitutes the recited path (which it does not, see below), **Gilboa** nonetheless does not teach modifying the path when predetermined conditions, indicative of encountering an obstacle, are met as well as instituting a corrective movement to overcome the obstacle. The Office action states that **Gilboa** supports the use of corrective movements in that in order to minimize a difference between the measured location of the probe and the estimated location of the target point-of-interest, it is necessary for the operator to move the catheter toward the point-of-interest with one or more corrective movements.

Even accepting this, **Gilboa** does not teach modifying the path, but rather only teaches (implicitly at most) making adjustments to keep the catheter on the original path. Thus, using the navigational approach of **Gilboa**, an operator would continually make “corrective movements” to keep or get the catheter back on the original path between the measured catheter position and the estimated target point-of-interest. However, **Gilboa** does not address the problem of encountering unforeseen (un-planned for) obstacles along the original, pre-planned path, much less offer any solutions. **Werp** does not cure this deficiency since it too only contemplates implementing a simple adjustment vector, based on the measured position, to place the catheter back on its original path. **Werp** does not teach or suggest modifying the path when conditions indicative of an obstruction are detected. **Ferry** also does not meet this limitation. At most, **Ferry** teach a “stuttering” movement to reduce static friction, but otherwise maintains navigation on its original path.

In addition, **Gilboa**, as mentioned above, does not teach the step of determining a new position to which said catheter is to be moved based on said determined first position and *according to said path established from said topological representation*. While the Office has stated that **Gilboa** meets the limitation emphasized above, Applicants point out that the text of **Gilboa** (see [0016]) specifically states that the navigation is conducted so as to “minimize a difference between the measured location of the probe and the estimated location of the target point-of-interest”. In three-dimensional space, minimizing the difference most immediately suggest a straight line, which is not in accordance with the recitation that the next point is determined in accordance with a path in the lumen system established from a topological representation of the lumen system.

In addition, claim 33 has been amended so that the determined corrective movement is along *the modified path*. The art relied on by the Office does not teach a corrective movement as now recited (*i.e.*, retreating, performing one of twisting and bending, advancing), much less along a *modified path*.

Even were **Gilboa**, **Werp** and **Ferry** combined, not all of the limitations of claim 33 would be met. Applicants wish to point out that **Ferry** does not teach the step of “determining

when the second position is not identical with said new determined position and when the orientation of said distal portion at a certain location within said lumen system, is different that at least one slope of said three dimensional path at said certain location” nor would there be any motivation or incentive for this check since **Ferry’s** strategy is predetermined to perform “stuttering” continuously. Moreover, **Werp** does not teach performing a corrective movement when the orientation does not match the slope of the path at a certain location. The correction strategy of **Werp** does not assess the orientation at all, and appears to focus on position. Accordingly, even were **Gilboa**, **Werp** and **Ferry** combined, not all of the limitations of claim 33 would be met. For this additional reason, the cited art does not negate patentability of claim 33.

Claims 18, 27, 29-32 depend from claim 33 and thus contain all the limitations thereof. Accordingly, for at least the same reasons given above in connection with claim 33, Applicants respectfully submit that the rejection has been overcome. Reconsideration and withdrawal of the rejection is hereby respectfully requested.

### **III. CLAIM REJECTIONS – 35 U.S.C. § 103**

In addition, claims 18, 26, 31 and 35 stand rejected under 35 U.S.C. § 103 as being unpatentable over **Gilboa** in view of **Werp**, further in view of **Ferry** and further in view of Strommer et al. (U.S. 2001/0031919 A1, hereinafter **Strommer**).

Independent claim 26 recites “updating at least one of said topological representation, said first position and said second position”. In turn, the term topological representation refers to the mapping of a lumen system, as more broadly described in the specification. While the topological representation of the lumen system may be discerned from an analysis of image data (*e.g.*, see page 12 of the application as originally filed, lines 13-21), a topological representation of a lumen system and image data of a lumen system are not the same. With this in mind, the paragraph of **Strommer** cited by the Office at most teach displaying a sequence of images synchronized with a real-time reading of the organ timing signal to provide real-time visualization of the inspected organ, and accordingly does not fairly teach updating the topological representation, the first or the second position, as claimed. For at least this reason,

even were it proper to combine **Gilboa, Werp, Ferry and Strommer** as proposed by the Office, not all of the limitations of the claims would be met. Reconsideration and withdrawal of the rejection is hereby requested.

Claim 18 recites a similar limitation as discussed above for claim 26 and for at least the same reasons, reconsideration and withdrawal of the rejection is hereby requested.

Claim 31 depends from independent claim 33 and claim 35 depends from independent claim 26, and each includes the limitations of the respective base claim. Accordingly, for at least the same reasons given above for claims 33 and 26, Applicants respectfully submit that the rejections have been traversed or overcome (as the case may be). Reconsideration and withdrawal of the rejections is hereby requested.

#### IV. CONCLUSION

In view of the above arguments and in further view of foregoing claim amendments, a Notice of Allowance is respectfully requested.

Respectfully submitted,

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By: /John W. Rees/  
John W. Rees, Reg. No. 38,278  
Dykema Gossett PLLC  
39577 Woodward Avenue, Suite 300  
Bloomfield Hills, Michigan 48304  
(248) 203-0832  
ipmail@dykema.com